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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY, DOCKET NO.	CONFIRMATION NO.
10/750,091	12/31/2003	Tae Soo Kang	DE-1391 CIP	1887

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1251 AVENUE OF THE AMERICAS  
NEW YORK,, NY 10020-1182

EXAMINER

CHEVALIER, ALICIA ANN

ART UNIT	PAPER NUMBER
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1772

DATE MAILED: 08/10/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/750,091

Applicant(s)

KANG ET AL.

Examiner

Alicia Chevalier

Art Unit

1772

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 23 May 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- |                                                                                                                        |                                                                                         |
|------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                                                       | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____                                                |

## **RESPONSE TO AMENDMENT**

1. Claims 1-17 are pending in the application.
2. Amendments to the claims, filed on May 23, 2005, have been entered in the above-identified application.

### ***REJECTIONS***

3. **The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.**

### ***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 11-17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 11 recites the limitation "substrate" in line 2 and then recites "glass substrate" in line 3. There is insufficient antecedent basis for the limitation "glass substrate" since Applicant merely introduced it as a generic substrate and never claims that the substrate is or comprises glass.

***Claim Rejections - 35 USC § 103***

6. Claims 1-6 and 11-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Machol (US Patent No. 5,719,705) in view of Spoko et al. (US Patent No. 6,436,541) and Applicant's background information in the instant specification.

Regarding Applicant's claims 1 and 2, Machol discloses an anti-reflective and anti-static structure (*title*) for display device (*col. 1, lines 11-27*), comprising a glass substrate (*col. 3, line 3*), and a first layer of niobium pentoxide (*col. 2, lines 30-33*), a first layer of silicon dioxide (*col. 2, lines 33-34*), a second layer of niobium pentoxide (*col. 2, lines 30-33*), and a second layer of silicon dioxide (*col. 2, lines 33-34*) successively formed in that order on the glass substrate (*figure 1*).

Machol fails to disclose an ITO layer between the glass substrate and the first niobium pentoxide.

Spoko discloses an anti-reflective and anti-static structure comprising a substrate, a TCO layer of ITO (Indium Tin Oxide) and layers of different index of refraction to provide the anti-reflective and anti-static properties (*col. 1, lines 12-15 and col. 4, lines 5-52*). The TCO layer has a sufficient thickness to have a sheet resistivity less than about 1000 ohms/square to provide the TCO layer with anti-static and electromagnetic shielding properties (*col. 2, lines 20-25*).

Applicant's specification in the background information, pages 1-3, describes a conventional anti-reflective and anti-static structure comprising a glass substrate, a layer of ITO, a first layer of silicon dioxide, a first layer of niobium pentoxide, and a second layer of silicon dioxide. The ITO has a typical thickness of about 19 nm.

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It would have been obvious to one of ordinary skill in the art at the time of the invention to use an ITO layer between the glass substrate and the first layer of niobium pentoxide as similarly taught by Sopko to the structure of Machol because of the ITO layer would provide anti-static and electromagnetic shielding properties. Furthermore, it would have been obvious in view of the prior art teaching of Applicant's specification that the ITO layer have a thickness of about 19 nm (about 17-19 nm) because it is a typical ITO layer thickness construction in the art.

The limitation "wherein the first layer of niobium pentoxide layer serves as an adhesive layer to increase adhesion strength between the ITO layer and the first silicon dioxide layer" is a functional limitation and is deemed to be a latent property of the prior art since the prior art is substantially identical in composition and/or structure. MPEP 2145 (II).

Regarding Applicant's claim 3, Machol discloses that the first niobium pentoxide layer has a thickness of *about* 3-5 nm, since the reference discloses that the first niobium pentoxide layer has a thickness of *about* 7-15 nm, which is deemed to be *about* 3-5 nm (*col. 7, lines 64-65*).

Regarding Applicant's claim 4, Machol discloses that the first silicon dioxide layer has a thickness of about 28-29 nm, since the reference discloses that the first silicon dioxide layer has a thickness of about 15-40 nm (*col. 8, lines 6-7*).

Regarding Applicant's claim 5, Machol discloses that the second niobium pentoxide layer has a thickness of about 110-120 nm, since the reference discloses that the second niobium pentoxide layer has a thickness of about 90-130 nm (*col. 8, lines 2-3*).

Regarding Applicant's claim 6, Machol discloses that the second silicon dioxide layer has a thickness of about 90-100 nm, since the reference discloses that the second silicon dioxide layer has a thickness of about 55-105 nm (*col. 8, lines 10-11*).

Regarding Applicant's claims 11 and 12, Machol discloses an anti-reflective and anti-static structure (*title*) for display device (*col. 1, lines 11-27*), comprising a substrate (*col. 3, line 3*), and an intermediate layer (*niobium pentoxide, col. 2, lines 30-33*), a first layer (*silicon dioxide, col. 2, lines 33-34*), a second layer (*niobium pentoxide, col. 2, lines 30-33*), and third layer (*silicon dioxide, col. 2, lines 33-34*), successively formed in that order on the glass substrate (*figure 1 and col. 3, line 3*).

Machol fails to disclose a base layer of ITO between the glass substrate and the intermediate layer, i.e. the niobium pentoxide.

Sopko discloses an anti-reflective and anti-static structure comprising a substrate, a TCO layer of ITO (Indium Tin Oxide), which is deemed to be a high refractive index material, and layers of different index of refraction to provide the anti-reflective and anti-static properties (*col. 1, lines 12-15 and col. 4, lines 5-52*). The TCO layer has a sufficient thickness to have a sheet resistivity less than about 1000 ohms/square to provide the TCO layer with anti-static and electromagnetic shielding properties (*col. 2, lines 20-25*).

It would have been obvious to one of ordinary skill in the art at the time of the invention to use an ITO layer between the glass substrate and the first layer of niobium pentoxide as similarly taught by Sopko to the structure of Machol because of the ITO layer would provide anti-static and electromagnetic shielding properties.

The limitation “the intermediate layer serving as an adhesive layer to increase adhesion strength between the high refractive index material layer and the first layer” is a functional limitation and is deemed to be a latent property of the prior art since the prior art is substantially identical in composition and/or structure. MPEP 2145 (II).

Furthermore, the high refractive index material layer and the second layer are deemed to have higher refractive index than the first and third layer, since they are made of the same material Applicant is claiming.

Regarding Applicant’s claim 13, Machol discloses that the intermediate layer and the second layer are niobium pentoxide layers (*col. 2, lines 30-33*).

Regarding Applicant’s claim 14, Machol disclose that the first and third layers are silicon dioxide layers (*col. 2, lines 33-34*).

Regarding Applicant’s claim 15, Machol discloses that the intermediate layer has a thickness of ***about*** 3-5 nm, since the reference discloses that the first niobium pentoxide layer has a thickness of ***about*** 7-15 nm, which is deemed to be ***about*** 3-5 nm (*col. 7, lines 64-65*).

7. Claims 7-10, 16 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Machol in view of Spoko and Applicant’s background information in the instant specification as applied above, and further in view of Hirai et al. (US Patent No. 5,424,008).

Machol, Spoko and Applicant’s background are relied upon as described above.

Machol, Spoko and Applicant’s background fail to disclose the average surface roughness and the peak-to-valley surface roughness of the glass substrate.

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Hirai discloses a glass substrate coated with antistatic/antiglare layers (*background of the invention*). The glass substrate has a surface roughness, which markedly improves the adhesion between the coating and substrate (*col. 10, lines 31-44*).

It would have been obvious to one of ordinary skill in the art at the time of the invention to add a surface roughness to the glass substrate of the combination of Machol, Spoko and Applicant's background as taught by Hirai because it would markedly improve the adhesion between the layers and the substrate.

The exact average surface roughness and peak-to-valley surface roughness is deemed to be a cause effective variable with regard to the adhesion strength between the anti-reflective/anti-static layers and the glass substrate. It would have been obvious to one having ordinary skill in the art to have determined the optimum value of a cause effective variable such as average surface roughness and peak-to-valley surface roughness through routine experimentation in the absence of a showing of criticality in the claimed combined thickness. *In re Boesch*, 205 USPQ 215 (CCPA 1980), *In re Woodruff*, 16 USPQ2d 1934, 1936 (Fed. Cir. 1990). One of ordinary skill in the art would have been motivated to optimize the average surface roughness and peak-to-valley surface roughness in order to improve the adhesion between the anti-reflective/anti-static layers and the glass substrate.

#### ***ANSWERS TO APPLICANT'S ARGUMENTS***

8. Applicant's arguments in the response filed May 23, 2005 regarding the previous rejections of record have been considered but are moot due to the new grounds of rejection.



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**Conclusion**


9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

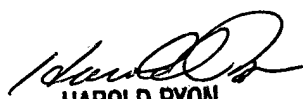
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alicia Chevalier whose telephone number is (571) 272-1490. The examiner can normally be reached on Monday through Friday from 8:00 am to 4:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Harold Pyon, can be reached on (571) 272-1498. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Alicia Chevalier  
8/1/05

  
HAROLD PYON  
SUPERVISORY PATENT EXAMINER  
1772

8/5/05